

## THE PARASITIC HABITS OF MUSCINA STABULANS FABRICIUS

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Over a period of many years specimens of *Muscina stabulans* Fabricius have been received with the notation that they were parasitic on certain insects but as most material was reared in cages containing soil there seemed to be reason to believe that the records were in error. Evidence now available indicates that the species is definitely parasitic and that it has a wide variety of habits. I do not recall the circumstances surrounding most of the rearings that have come to my notice but some of the observations made are worthy of mention.

In 1941 Mr. Henry Bird submitted a series of specimens he had reared in Rye, New York. He informed me that he had found the larvæ attacking the pupæ of the elm leaf beetle in areas about the base of the tree where the pupæ were numerous. The fly larvæ were not internal parasites but were predaceous upon the beetle pupæ. There has been considerable other evidence to substantiate the predaceous habits of the *Muscina* larvæ.

As concerns the internal parasitic habit I cite the following incident. Some time in early June my young son gathered about a dozen wandering caterpillars of the American tent caterpillar and placed them in a jar. The top of the jar was tightly screwed on so there was no opportunity for the flies to lay eggs. The jar was set aside and received very little attention but eventually a moth was observed in the jar and in late June (1942) my son stated that there were some flies in the jar. It was then decided to clean out the jar but it remained in its undisturbed state, as such things are liable to, for a time longer. On July 4th my son informed me there were more flies in the jar and he brought it to me. A number of flies were crawling about actively but I paid little attention to them, presuming that they were one of the well-known parasites. Eventually (July 9) the jar was opened and the flies examined. All proved to be *Muscina stabulans*.

Since the original object had been to raise some moths no count was made of the number of caterpillars. They had been picked

up while crawling on the sidewalks in the northern part of Manhattan, New York City. The number was roughly a dozen, certainly not more than fifteen. From these caterpillars only two moths emerged. Twenty-eight adult flies were taken from the jar and counted but there were a number, perhaps as many as ten, that were left tangled in the cocoons. This indicates that more than one larva was present in at least most of the caterpillars.

Admittedly this is not a very scientific experiment, but it does prove to my satisfaction that *Muscina stabulans* is at times parasitic. Since it is not very scientific we may be excused if we speculate upon the method by which the fly larvæ enter the caterpillars. The "tents" provide an excellent place for the deposition of eggs and if they are laid in the tents, which the flies could easily enter through the openings the caterpillars use, it would be easy for the larvæ to attack the caterpillars and bore their way inside. This appears to be the most logical method, but the eggs might also be laid on the silken "runways" the caterpillars build in going and coming from the "tent."

It seems likely that the larvæ of *Muscina stabulans* are normally predaceous and that they are not scavengers, as has been generally believed. Possibly their association with the house fly and other insect larvæ is due to their predaceous habits. The internal parasitic habit does not appear to be well established because records are not numerous. We may therefore assume that it is internally parasitic incidentally or accidentally; only when circumstances are most favorable.

Previous records, that I recall, of the parasitic habit, are from South Africa, Canada and the United States. I believe that the Canadian records included sawflies and grasshoppers, as well as other insects.

It is hoped that with the definite establishment of the parasitic habit of *stabulans* further studies may be made in order to learn the true facts about this insect. As it is a very common species it possibly plays an important part in the natural control of insects. If certain strains should prove to be parasitically inclined it is possible that they would be of value in the control of certain types of pests that occur in large enough numbers to cause serious damage.